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14. *SCOLOPENDRA HARDWICKEI* (NEWPORT, 1844) FEEDING ON *OLIGODON TAENIOLATUS* (JERDON, 1853) IN THE SCRUB JUNGLES OF PONDICHERRY, SOUTHERN INDIA

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Apart from feeding on three different species of bats (Molinari *et al.* 2005), centipedes of the genus *Scolopendra* (Chilopoda: Scolopendromorpha) have also been reported to prey upon reptiles by Lawrence in 1953, Butler in 1970 and in 1975 by Easterla (Carpenter and Gillingham 1984). These include frogs, toads, small lizards, and serpents (Molinari *et al.* 2005).

Individuals of three North American snake species, namely Central Texas Whipsnake *Masticophis taeniatus girandi* (Stejneger and Barbour 1917), Texas Brown Snake *Storeria dekayi texana* (Trapido 1944), and Lined Snake *Tropidoclonion lineatum* have been recorded as the prey of the Giant Desert Centipede *Scolopendra heros* (Girard 1853), when kept in the same vivarium as the centipede. All the snakes were killed by incisions to the ventral neck and fed upon by the centipede on successive nights (Cates pers. comm.). Easterla (1975) describes a scolopendrid feeding on the Long-nose Snake (*Rhinocheilus* sp.) (Forti *et al.* 2007). All of the above records refer to North, Central and South American species of *Scolopendra*, some of which are known for their large sizes.

India harbours 95 species of Scolopendrids, *Scolopendra hardwickei* (Newport 1844) being the largest (Khanna 2009). There have been observations of Indian Scolopendrids feeding on toads and frogs (Daniels pers. comm.), and a gecko in the wild (Whitaker pers. comm.). This paper reports the first record of predation on *Oligodon taeniolatus* (Serpentes: Colubridae) by *S. hardwickei*, and one of the few published accounts of a Scolopendrid feeding on an Indian snake (for another record see Mirza and Ahmed 2009) under natural conditions, in a private reforestation site of the Sri Aurobindo Ashram near Pondicherry.

Oligodon taeniolatus is a Kukri snake which is active by day and night, and may be seen predating on amphibian and reptile eggs. It is an opisthoglyphous (rear-fanged) snake and possesses a functional venom gland and is known to feed on lizards in captivity (Whitaker and Captain 2004)

The observation was made by one of the authors (Pattanayak) on the dark night of July 06, 2009, around 21:00 hrs. The observer's attention was first drawn to the scene of predation by the sound of pebbles rubbing against one another. Upon investigation the source of the sound was identified as a struggling *Oligodon taeniolatus*, *c.* 36 cm long, trying to escape under a layer of pebbles while a large centipede, *c.* 25 cm long, fiercely held on to the area immediately behind the snake's cloacae.

The maxillipeds (the first 4 to 5 pairs) of the centipede had clearly pierced the Kukri's flesh; blood was oozing from the gaping lesion along with some viscera of the yet living reptile. The mandibles of the centipede were thrust into this wound and the arthropod seemed to be actively ingesting the snake's fluids.

Despite fiercely trying, the snake was unable to free itself from the clutches of the centipede, which then began to move up the length of the snake. While doing so it curved its appendages around the snake.

Forty-five minutes after the struggle began the centipede had moved its entire body upon the snake's dorsal surface and inflicted yet another deep wound near the throat. The snake seemed to be giving in but still put up some resistance as the predator and prey coiled into contorted postures.

Unfortunately, the centipede abandoned its prey when the observer got too close; the arthropod vanished swiftly into the immediate undergrowth while the snake crawled on limply. A closer inspection of the wounds revealed a protruding bone, demonstrating the depth and extent of the laceration the scolopendrid had inflicted on it. The snake was left alone and, judging by its conditions, probably died in the hours that followed. The bite of a scolopendrid is painful to adult humans, and can be fatal to infants (Khanna 2009).

With the exception of the Long-nose Snake (Easterla 1975) the centipede was always longer than its prey and may have outweighed it as well (Carpenter and Gillingham 1984). In this case, though the centipede seemed heavier, the snake was clearly longer, but this did not seem to increase the odds of its survival; strangely enough, all through its ordeal, the snake made no attempts to bite back at the centipede.

Do scolopendrids regularly feed on snakes or was this a display of opportunistic behaviour, and hence a rare event? And to what limit does this fierce centipede go to get a meal, e.g., does it feed on other larger/venomous snake species as well? These are a few questions which when answered could lead to a whole new understanding of little known trophic links, e.g., arthropods preying on vertebrates, the complexity and significance of which probably has not been evaluated enough.

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15. ARCHITECTURE OF ABUTTING SURFACES OF THE SHELLS OF ACORN BARNACLES

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Introduction

In recent years, several reports on the structure and architecture of the shells of acorn barnacles (Cirripedia, Crustacea) have been published (Karande and Palekar 1963; Klepal and Barnes 1975; Murdock and Currey 1978; Otway and Anderson 1985; Bourget 1997). By and large these reports deal with the adhesive and compressive strengths of various species settled on a variety of natural marine substrates and on man-made structures (Costlow 1956).

In the macrostructure study of barnacles, some of the shell structures considered are radial margins of parietes, alar margins of parietes, parietal canals, radial canals in basal plate, parietal sheath and interlamellar primary and secondary septae (Bourget 1997). All these structures which contribute to the strength of the shells are in the forms of ridges, teeth or lamellar ribs, and are sculptured more or less elaborately in different cirripede species. In the present study, abutting sculpturings of ten Indian species and eleven species endemic to the American coast were examined.

In this study, individual adult barnacles of various dimensions were used. The local barnacles examined were *Euraphia withersi* (Pilsbry), *Chthamalus malayensis* (Pilsbry), *Chirona amaryllis* (Broch), *Balanus amphitrite* (Darwin), *B. variegatus* (Darwin), *B. kodakovi* (Tarasov and Zevina), *Megabalanus tintinnabulum* (Linnaeus), *Tetraclita purpurascens* (Wood) and *Tetraclitella karandei* (Ross).

It also became possible to examine macrostructures of acorn barnacles sent to us by Dr. Arnold Ross of the American Museum of Natural History, San Diego. These species collected along the US coast were *Chthamalus dalli* (Pilsbury), *Chthamalus fissus* (Darwin), *Balanus (Semibalanus) cariosus* (Pallas), *B. crenatus* (Bruguiere), *B. glandula* (Darwin), *B. balanus* (Linnaeus), *B. rostratus* (Hock), *Tetraclita squamosa rubescens* (Darwin),